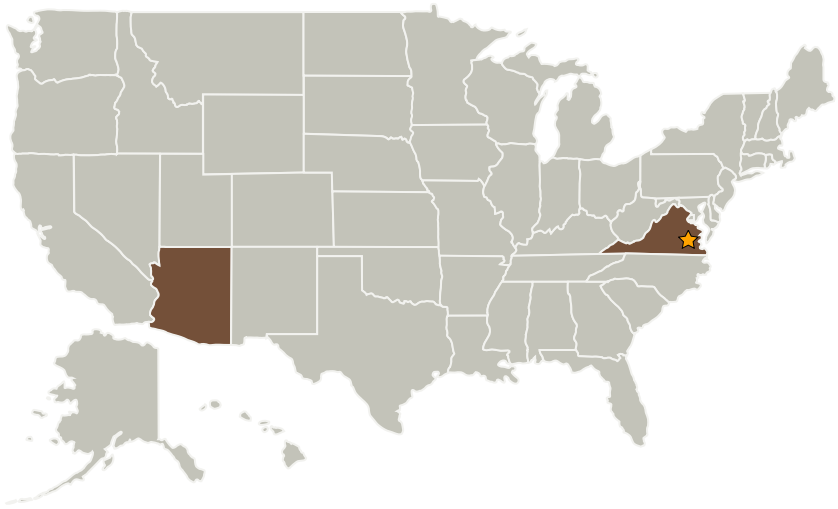
1.26 Single Frequency Fiber Laser, Phase II

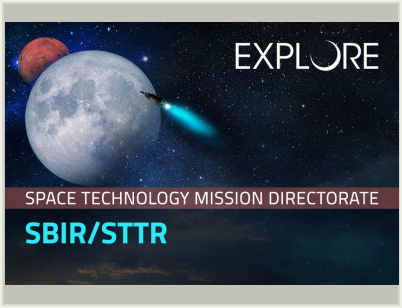
Completed Technology Project (2009 - 2012)

Project Introduction

This proposal is for the development of an innovative compact, high power, and extremely reliable 1.26 micron Ho-doped single frequency fiber laser. The proposed single frequency seeder fiber laser consists of Raman pump laser and single frequency 1.26-micron fiber laser, which will be constructed by using Ho3+-doped fluoride glass fiber. A Raman fiber laser is used as a resonant pump laser source for Ho3+-doped fiber laser. High gain per unit length at 1.26 micron can be achieved in Ho-doped fluoride glass fiber due to the strong pump absorption and strong emission at 1.2 micron transition. 5 W single frequency 1.26-micron MOPA system with high-speed frequency modulation capability will be developed. It consists of a 1.26 micron single frequency seeder fiber laser and a 2-stage fiber amplifier. This type of fiber based seed laser is needed for remote sensing of O and O -N for measuring atmospheric pressure. The single frequency 1.26-micron fiber laser with high-speed frequency modulation capability and electronic control can be used to build coherent laser radar to perform instantaneous measurement. It offers much higher resolution compared to currently existing Raman fiber laser.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
NP Photonics, Inc.	Supporting Organization	Industry	Tucson, Arizona

Primary U.S. Work Locations	
Arizona	Virginia

Project Transitions

December 2009: Project Start

May 2012: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers